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The great flood of 1883 was of unprecedented magnitude, and so great a rise was entirely unexpected. The stage of water had not exceeded sixty feet for thirty-seven years. By it the whole of those parts of Cincinnati and the towns on the opposite side of the river—Covington, Newport, and Dayton, Ky.—located nearest the water were inundated. In Covington, in all, perhaps 350 houses were submerged. In Newport not less than 2,100 houses were flooded. In Dayton and Bellview, Ky., over 400 houses were under water.

In Cincinnati, travel on many of the street-car lines was suspended; nearly all the freight and passenger depots were submerged; all but two of the railroads stopped running; fifteen of the largest coal-yards were under water; and the gas-works suspended, leaving the city in darkness. More than 1,500 business-houses, and nearly 3,700 dwelling-houses, were inundated, causing more than 2,400 people in Cincinnati alone to become objects of charity, for whom shelter, covering, clothing, and food must be provided.

It is within bounds to say that one-tenth of the population in and around Cincinnati needed assistance of this kind. The Associated charities superintended the distribution of aid to those suffering. From Feb. 12 to March 5 this organization relieved 5,260 families, or 24,111 persons. It issued 105,141 rations, and supplied 2,046 families with clothing, 1,916 families with bedding, and 647 families with coal. It also distributed 3,991 pairs of boots and shoes.

The pecuniary losses that resulted from this flood can never be precisely known, but it has been estimated that along the two thousand miles of shores inundated it aggregated sixty millions of dollars.

The town suffering most in proportion to its size was Lawrenceburg, Ind., which was completely inundated. It is so situated that at this stage of water the Miami River runs directly through the town, pushing houses from their foundations, and sweeping away every thing movable.

The flood was due to two storms, — the first from Feb. 3 to 6, in which about 3.5 inches of rain fell at Cincinnati; and the second on Feb. 10 and 11, in which the rainfall was about 2 inches. These storms extended to the head waters of the Ohio, and fell upon frozen ground; so that the water could not soak into the earth, but was carried at once into the water-courses.

The flood of 1884 arose from a single storm on Feb. 4 to 6, in which the precipitation was

unusual in amount and rapidity; being as much as 4.46 inches in eight hours less than three days. This storm, combined with the warm weather, caused a general thaw over all the region from which the feeders of the Ohio come, and sent large volumes of water into the rivers, besides the immediate rainfall.

When we consider what an unusual combination of circumstances is necessary to cause a stage of water exceeding sixty feet, and that such an occurrence cannot be ordinarily expected more than about once in a quarter of a century, it appears most remarkable that two such floods should happen in successive years.

A WOMAN'S JOURNEY TO THE KARAKORUM VALLEY.

MADAME UJFALVY, who recently accompanied her husband to Kashmir and Baltistan, has published an interesting and lively account of the glacial region of the Himalayas, which she was the first European woman to penetrate. In the village of Shamba, in the Kulu country, on the occasion of a ceremonial visit to the temple by the rajah, it is customary for the priests to sacrifice a she-goat. Once undertaken, the priests may not eat until the sacrifice is complete; and the assent of the animal to its own death, without which it may not be killed, is supposed to be indicated by a trembling of the body. The unconscious creature is not always in a trembling mood; and to induce the same the priests squirt cold water into its ear, which usually has the desired effect. On one occasion, the authoress relates that even this failed, and the goat, outraged by such treatment, escaped to the rugged mountain side, and, even after recapture, refused to gratify its captors. Put to their wits, the priests finally plunged it bodily into the icy mountain stream which dashes through the village. Taken out again, it naturally trembled with its whole body; and the sacrifice was finally completed to the satisfaction of all, especially of the priests, who had already imagined themselves perishing of famine.

Srinagar, capital of Kashmir, sometimes known as the oriental Venice, seemed less attractive than report had made it. The streets were narrow canals of stagnant and offensive water, in which swarms of ragged people disported themselves. Dirt was too evident to be ignored. Only when evening set in, and all contrast disappeared under the moonlight, did this singular and sombre town seem to harmonize with the magnificent mountains which surround it. There are some hundred thousand inhabitants; and, besides the finest quality of shawls, they produce the finest and most artistic work in silver and copper. The passage to Baltistan from Srinagar traverses a singular plateau fourteen thousand feet above the sea. The earth is bare, and undulated as if in waves. It is the bed of an extinct glacier, and surrounded by mountains, between which the wind rages, rendering it passable only in the three summer months. Even in

September, snow-hurricanes may destroy rash travelers. Though English authorities had informed them that rain was impossible on this plateau, the party were drenched. Marmots and bears alone inhabit this solitude. Grass is rare, and, at one place where abundant, is said to be poisonous for animals. These regions offer a desolate grandeur, unsoftened by vegetation.

The descent to Baltistan and the sources of the Indus was through scenery equally wild and melancholy, so that the first signs of cultivation met the eye as grateful relief.

The Baltis are Mussulmans, and chiefly remarkable for their devotion to the game of polo; which, in fact, originated here, and for which their well-trained, tough little mountain ponies are admirably adapted.

Their capital is Skardo; but the purest type of the race is found in the Shigar valley, which contains the largest glaciers in the world after those of Greenland, and the highest mountains in the world after Mount Everest. The glaciers form an unbroken line for nearly a hundred miles. Mount Dapsang of the Karakorum range is only some two hundred feet lower than Mount Everest. But even here the Shigar River waters an attractive oasis of some six miles in extent, with fields of millet and beans, and orchards weighed down with fruit, among which nestle tombs, mosques, and picturesque though uncomfortable habitations. The apricots and melons of this region are delicious.

The party returned by another and very difficult route, which followed all the windings of the Indus; yet here and there little villages were set, like verdant nests, among the rocks. In spite of the incessant conflict with nature, which a residence here entails, the people are devoted to their country, and prefer it to any other.

The journey to Shigar was due to the munificence of the Maharajah Rambir Singh of Kashmir; and its scientific results, which remain to be published, are believed to be important.

THE ARTIFICIAL PRODUCTION OF RAIN.

IN his anniversary address delivered to the Royal Society of New South Wales, Mr. H. C. Russell, the president and government astronomer, deals at some length with the subject of producing rain artificially. He begins with a few points in its history, telling first how Arago, finding the practice of firing guns common in some of the departments of France, had tried to trace the origin of the custom, which probably began in 1769. A retired naval officer, who at sea had seen water-spouts destroyed by cannon shots, made his home in a district that suffered from violent rain and hail storms, and determined to try the power of shot and shell upon these new foes; and, setting up his battery, his success was such that the district was protected from the violent storms. The practice became popular in France; and up to the year 1806, and even later, many communes kept a

battery of small guns for this purpose, the commune of Fleury even going so far as to get a cannon which used a pound of powder at each discharge. Arago could not trace what the effect had been, but he at least was not convinced that it had had any good effect; and after a time the practice became obsolete. Volta's biographer says that "it is well known that Volta thought a possible advantage might be found in having large fires during thunder-storms;" his reason probably being, that the smoke would serve as a conductor for the electricity, and so prevent dangerous discharges.

To test the effect of the discharge of artillery on the weather, Arago examined the weather-record of the Paris observatory for many years, especially for the days adjacent to those on which the regular gun-practice took place in the fort, situate somewhat less than two miles from the observatory. The firing took place at this fort on certain days in the week, from seven to ten A.M., about one hundred and fifty shots being fired. Arago found, that, out of 662 days preceding the practice, 128 were cloudy; out of 662 days of practice, 158 were cloudy; out of 662 days following practice, 146 were cloudy; which he regarded as proof that the discharge of heavy artillery does not seem to have the effect of dissipating the clouds.

Struck at one time by the amount of destruction caused by hail-storms, Arago proposed drawing off the electricity by means of wires carried up to great elevations by captive balloons; but, when he came to the practical consideration of the scheme, it was soon seen that each balloon would not protect more than, perhaps, a thousand square yards, — a mere speck of France. In later years he was led to doubt the value of such a means of protection.

Arago relates, that, in tracing the history of the use of cannons, he found that bells, and especially church-bells, had preceded them; and it was at one time firmly believed that the vigorous ringing of church-bells was sufficient to dissipate dangerous storms. Mr. Russell finds that up to 1810, or later, the idea was popularly prevalent that storms might be destroyed or prevented by fire or guns; and he thinks that a complete change to the opposite opinion has taken place since then. He says, —

"Australia, like Africa, wants the rain-doctor to make rain, not drive it away. It is not only in Australia, however, that the belief in the artificial production of rain exists. In America, during the civil war, it was a matter of common observation that rain followed the great battles; and the belief in this became so general, that farmers began the practice of making large heaps of brushwood on each farm, and, when they wanted rain, lighting them all together. I cannot find any reference to the results of this system in the Smithsonian publications, in which almost every subject of this kind is dwelt upon; but the practice seems to have been given up."

Mr. Russell then alludes to the well-known little volume by Mr. Edward Powers, published in 1870, and entitled 'War and the weather, or the artificial production of rain;' and to the review of this book in *Silliman's journal*, inclining to the opinion that great battles do exert some influence in the production of rain, but failing to accept Mr. Powers's incom-